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Louisburg, KS 66053
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ENGINEERING TEST REPORT FORM
For
TESTING to EN 300 328 v1.8.1 (2012-06)

For

Laird Technologies
11160 Thompson Avenue
Lenexa KS 66219
913 981-5712

Daniel Waters
Engineering Specialist

Model: RM024 Series

Digital Transmission System Transmitter
Frequency 2,400-2,483.5 MHz

Test Date: October 10, 2014

Test Report Number: 141007

Certification Date: October 10, 2014

Certifying Engineer: Scot D Rogers

Scot D. Rogers
Rogers Labs, Inc.
4405 West 259th Terrace
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Table of Contents

TABLE OF CONTENTS 2

REVISIONS 3

OPINION / INTERPRETATION OF RESULTS 4

EQUIPMENT TESTED 4

Equipment Function 5

Equipment Configuration 5

APPLICANT DETAILS 6

ENVIRONMENTAL CONDITIONS 12

UNITS OF MEASUREMENTS 12

TEST SITE LOCATIONS 12

RF OUTPUT POWER, SUB CLAUSE 4.3.1.1 13

DUTY CYCLE, TX-SEQUENCE, TX-GAP, SUB CLAUSE 4.3.1.2 13

ACCUMULATED TRANSMIT TIME, FREQUENCY OCCUPATION AND HOPPING SEQUENCE, SUB CLAUSE 4.3.1.3 14

Plot of Dwell time on channel 15

Plot of channel occupancy during 30-second period 15

HOPPING FREQUENCY SEPARATION, SUB CLAUSE 4.3.1.4 16

Plot of Frequency Serration 16

MEDIUM UTILIZATION (MU) FACTOR, SUB CLAUSE 4.3.1.5 17

ADAPTIVITY (ADAPTIVE FREQUENCY HOPPING), SUB CLAUSE 4.3.1.6 17

OCCUPIED CHANNEL BANDWIDTH, SUB CLAUSE 4.3.1.7 18

Plot of Occupied Bandwidth 18

TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF-BAND DOMAIN, SUB CLAUSE 4.3.1.8 19

Plot of Out-of-band emissions (low band edge) 20

Plot of Out-of-band emissions (high band edge) 20

TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN, SUB CLAUSE 4.3.1.9 21

Unwanted emissions (Antenna Port Conducted) 22

Unwanted emissions (Radiated Chip Antenna) 23

Unwanted emissions (Radiated 2 dBi Dipole Antenna) 24

RECEIVER SPURIOUS EMISSIONS, SUB CLAUSE 4.3.1.10 25

RECEIVER BLOCKING, SUB CLAUSE 4.3.1.11 25

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS 26

PHOTOGRAPHS OF THE EQUIPMENT 27

External photograph front side 27

External photograph rear side 27

Photograph Radiated Emissions Test Setup 28

Revisions

Revision 2 Issued February 13, 2015 – updated Opinion table ref (pg4), added model info (pg6)

Revision 1 Issued October 29, 2014

Opinion / Interpretation of Results

Tests Performed	Results
Maximum transmit power, EN 300 328 paragraph 5.3.2	Complies
Power Spectral Density, EN 300 328 paragraph 5.3.3	N/A
Duty Cycle, Tx-sequence, Tx-gap, EN 300 328 paragraph 5.3.2	N/A
Dwell time, Minimum Frequency Occupation & Hopping Sequence, EN 300 328 paragraph 5.3.4	Complies
EN 300 328 paragraph 5.3.5 Frequency hopping requirements	Complies
Medium Utilization (MU) Factor, EN 300 328 paragraph 5.3.2	N/A
Adaptivity (modulations other than FHSS), EN 300 328 paragraph 5.3.7	N/A
Occupied Channel Bandwidth, EN 300 328 paragraph 5.3.8	Complies
Transmitter Out-of-Band Domain, EN 300 328 paragraph 5.3.9	Complies
Transmitter unwanted emissions spurious domain, EN 300 328 paragraph 5.3.10	Complies
Receiver spurious emissions, EN 300 328 paragraph 5.3.11	Complies
Receiver Blocking, EN 300 328 paragraph 5.3.7	N/A

Equipment Tested

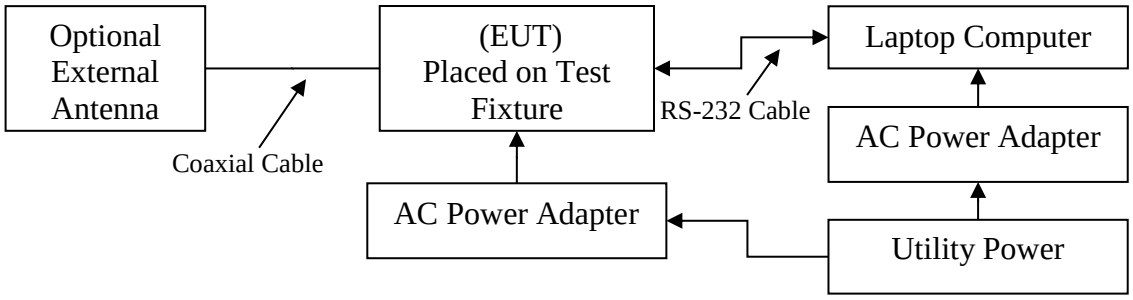
Equipment	Model / PN	Serial Number
EUT	RM024	A
CPU	HP CRVSA-02T1-75	TW24416178
2 dBi Chip	WIC2450A	N/A
5 dBi Dipole	S151-6-PX-2450S	N/A

Test results in this report relate only to the items tested.

Equipment Function

The EUT is a 2404-2470 MHz Frequency Hopping Spread Spectrum Transceiver Module used to transmit data in applications offering wireless connectivity. The design offers operation as a 43 hop set mode. The equipment is marketed for use to incorporate a wireless link to exchange data information from one point to another. The design offers two antenna options (PCB mounted chip antenna and u.fl connection). For testing purposes, the RM024 transceiver was connected to the manufacturer supplied test fixture, AC/DC power adapter, and communicating to the laptop computer allowing for data communications and operational control of the transmitter. The RM024 received power from the test fixture and offers no other provision for connection to other interface or power systems. Preliminary investigation was performed for all channel bandwidths and modes of operation. Testing of the RM024 and support equipment was performed with the EUT placed on the test fixture, powered from the AC/DC power adapter, and set to transmit in all available data modes and channels. Test results in this report relate only to the products described in this report.

Equipment Configuration



Applicant Details

Applicant's details		
Category of applicant (please tick relevant box opposite)	X	Manufacturer
		Importer
		Distributor
		Agent

Company name	Laird
Street address	11160 Thompson Ave.
Postal code, city	Lenexa, KS 66219
Post box	
Postal code, city	
Country	U.S.A
Contact person name	Daniel Waters
Phone number	913-981-5712
Fax number	913-492-1243
Email address	Daniel.waters@lairdtech.com
Web site address	http://www.lairdtech.com/Products/Wireless-Module/

Manufacturer's details (1)	
Company name	Laird
Street address	11160 Thompson Ave.
Postal code, city	Lenexa, KS 66219
Post box	
Postal code, city	
Country	U.S.A
Contact person name	Daniel Waters
Phone number	913-981-5712
Fax number	913-492-1243
Email address	Daniel.waters@lairdtech.com
Web site address	http://www.lairdtech.com/Products/Wireless-Module/

(1) skip this section if applicant is manufacturer.

Type designation		
The type designation may be either a single alphanumeric code or an alphanumeric code divided into two parts (2)		
Type designation as a single alphanumeric code		
Type designation in two parts		
1	Equipment series no (3)	RM024
2	Equipment specific no (4)	RM024-S10-C-20 / RM024-S10-M-20 / RM024-P10-C-20 / RM024-P10-M-20 / RM024-S10-C-24 / RM024-S10-M-24 / RM024-P10-C-24 /RM024-P10-M-24

(2) This is the manufacturer's numeric or alphanumeric code or name that is specific to a particular equipment. It may contain information in coded form on the characteristics of the equipment e.g. frequency, power. The manufacturer is free to choose the form of the type designation.

(3) This is the number, code or trade name used by the manufacturer to describe a series or 'family' of equipment of substantially the same mechanical and electrical construction which will include a number of related equipments. This number is often referred to as the "model no.".

(4) This is the manufacturer's identification number given to a specific equipment in the series or 'family' of equipments. It is often referred to as the "identification number".

Type of equipment (5)	
	Stand-alone (Equipment with or without its own control provisions)
	Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)
X	Plug-in card (Equipment intended for a variety of host systems)
	Other:

(5) Equipment belongs to one of the following (and only to one). Separate application forms are required for each variant.

Type of antenna		
	integral antenna with temporary RF connector	
X	integral antenna without temporary RF connector	
X	antenna connector	
Number of antenna assembly(ies) submitted		2

Antenna assembly parameters	
Antenna assembly identification	Antenna assembly gain (dBi)
2.4Ghz Dipole / Part# S181FL-6-PX-2450S	2dBi
2.4Ghz Chip / Part# WIC2450-A	2dBi

Transmitter technical characteristics		
Method of frequency generation (please tick relevant box opposite)		Crystal
	X	Synthesizer
		Other:
Transmitter operating frequency range in MHz		2402 MHz to 2470 MHz

Spread spectrum technique used	
	Direct sequence (DSSS)
X	Frequency hopping (FHSS)
	Combined
	Other :

Spread spectrum parameters			
DSSS	chip sequence length (bits)		
	spectrum width (MHz)		
FHSS	total number of hops (units)	43	
	dwell time (milliseconds)	10.62 mS	
	bandwidth per hop (MHz)	1.137 MHz	
	max. separation of hops (MHz)	1.05 MHz	
Transmitter aggregate data rate (bits per second (> 250 kbit/s))			500kbit/s or 280kbit/s

(see ETSI EN 300 328, clause 5.1.2)

Transmitter RF power characteristics				
Antenna assembly identification	RF power			
2.4Ghz Dipole	Effective radiated power (dBm)			< +10dBm
	Peak power density, FHSS (dBm/100kHz)			
	Peak power density, DSSS (mW/MHz)			
2.4Ghz Chip	Effective radiated power (dBm)			< +10dBm
	Peak power density, FHSS (dBm/100kHz)			
	Peak power density, DSSS (mW/MHz)			
	Effective radiated power (dBm)			
	Peak power density, FHSS (dBm/100kHz)			
	Peak power density, DSSS (mW/MHz)			
	Effective radiated power (dBm)			
	Peak power density, FHSS (dBm/100kHz)			
	Peak power density, DSSS (mW/MHz)			
	Effective radiated power (dBm)			
	Peak power density, FHSS (dBm/100kHz)			
	Peak power density, DSSS (mW/MHz)			
Is transmitter output power variable?		No		
	X	Yes		continuous variable
				stepped variable
				stepsize (dB)
				minimum RF power (dBm)
			X	maximum RF power (dBm): ...+9dBm.....
Can the transmitter operate unmodulated ?	X	No		
		Yes		
Is the transmitter intended for Continuous duty ?	X	No		
		Yes		
Is the transmitter intended for Intermittent duty ?		No		
	X	Yes		
Transmitter duty cycle	Tx on (seconds)			10mS
	Tx off (seconds)			3mS
	Duty cycle (Tx on / (Tx on + Tx off))			76%
Is continuous operation possible for testing purposes ?	X	No		
		Yes		
Equipment state during the test	Tx on (seconds)			10mS
	Tx off (seconds)			3mS
	Duty cycle (Tx on / (Tx on + Tx off))			76%

If the transmitter ON time is less than 10 microseconds, the applicant shall appoint a test house and agree a test method with the National Regulatory Authority and accreditation authority.

Transmitter power source (6)				
Battery (please tick relevant box opposite)				Nickel Cadmium
				Mercury
				Alkaline
				Lead acid (Vehicle regulated)
				Leclanché
				Lithium
				Other
DC voltage (VDC)				2.3 – 3.6 Volts
DC maximum current (mA)				120mA (40ma average.)
End point voltage as quoted by equipment manufacturer (Volt)				
AC mains	AC Voltage (VAC)			
	AC mains frequency (Hz)			
	AC Phase			Single phase
				Three phase
Common power source for transmitter and receiver		X		Yes
				No

(6) If a transmitter and receiver use the same power source, this should be declared. In such cases only the box for the transmitter power source should be filled in.

Receiver technical characteristics			
Method of frequency generation (please tick relevant box opposite)			Crystal
	X		Synthesizer
			Other:
Intermediate frequencies	1st (MHz)		0.406MHz (500k data rate) 0.28MHz (280k data rate)
	2nd (MHz)		
	3rd (MHz)		
Is local oscillator injection frequency higher or lower than the receiver nominal frequency ?			Higher
	X		Lower Near zero IF
Receiver operating frequency range (MHz)	2404 to 2470 MHz		

Receiver power source (7)			
Battery (please tick relevant box opposite)			Nickel Cadmium
			Mercury
			Alkaline
			Lead acid (Vehicle regulated)
			Leclanché
			Lithium
			Other
DC voltage (VDC)			2.3-3.6V
DC maximum current (mA)			33mA (12mA average)

End point voltage as quoted by equipment manufacturer (volt)			
AC mains	AC Voltage (VAC)		
	AC mains frequency (Hz)		
	AC Phase		Single phase
			Three phase
Common power source for transmitter and receiver			Yes
			No

(7) If a transmitter and receiver use the same power source, this should be declared. In such cases only the box for the transmitter power source should be filled in.

Transmitter and receiver characteristics	
ITU designation(s) of emission	1M02 F1D

Extreme temperature ranges over which equipment is to be type tested	
	-20°C to +55°C
	-10°C to +55°C
	-0°C to +35°C (indoor home and office use)
X	Other (8) :
Extreme temperature ranges for the host(s) :	-40°C to +85°C

(8) The equipment shall be tested over the following temperature ranges :
a) -20ºC to +55ºC in the case of stand-alone equipment ;
b) over the extremes of the temperature range(s) of the intended host equipment(s) in case of plug-in radio devices (see ETSI EN 300 328 clause 6.4.1).

Construction of equipment	
	Single unit
X	Multiple units

If multiple units describe each one clearly:

There is one top-level hardware version available in the RM024 family. That top-level surface mount version can be ordered by itself or mounted to a pluggable interface board. Hardware also includes the option for either an integral 2dBi chip antenna or a U.FL RF connector, which can be used to connect dipoles up to 2 dBi in gain. The option also exists for removing the chip antenna section of the board when it is not being populated.

*PART #	FORM FACTOR	ANTENNA
RM024-S10-C-20	Surface Mount	U.FL
RM024-S10-M-20	Surface Mount	U.FL or chip
RM024-P10-C-20	Pluggable	U.FL
RM024-P10-M-20	Pluggable	U.FL or chip

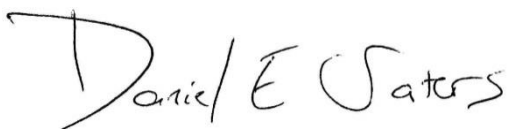
Automatic equipment switch off		
If the equipment is designed to automatically switch off at a predetermined voltage level which is higher or lower in value than the battery minimum voltage calculated values this shall be clearly stated.		applies
		does not apply
	X	cut off voltage ...1.8V

Other items supplied	
	Spare batteries
	Battery charging device
	Special tools for dismantling equipment
	Host Systems (see ETSI EN 300 328, clauses 6.4 and 6.5) (supply host details separately)
X	Test jig or interface box (if applicable)
	RF test fixture
	User Manual
	Technical documentation (Handbook and circuit diagrams)
	Test data sequence specified (must be supplied separately
	other :.....

(9) The EN 300 328 indicates information to be provided in the User Manual. The User Manual shall be provided with the application form.

Declarations		
Are the equipments submitted representative production models ?	X	yes
		no
If not are the equipments pre-production models?		yes
	X	no
If pre-production equipments are submitted will the final production equipments be identical in all respects with the equipment tested ?		yes
		no
If no supply full details:	Details:	
Is the equipment submitted marked in accordance with R&TTE requirements.	X	yes
		no

I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature	
Name	Daniel E. Waters
Position held	Certifications Specialist
Date	28 October 2014

Environmental Conditions

Ambient Temperature	23.7° C
Relative Humidity	42%
Atmospheric Pressure	1011.3 mb

Units of Measurements

Conducted EMI	Data is in dBµV; dB referenced to one microvolt
Radiated EMI	Data is in dBµV/m; dB/m referenced to one microvolt per meter

Test Site Locations

Conducted EMI	The AC power line conducted emissions testing performed in a shielded screen room located at Rogers Labs, Inc., 4405 W. 259th Terrace, Louisburg, KS
Radiated EMI	The radiated emissions tests were performed at the 3 meters, Open Area Test Site (OATS) located at Rogers Labs, Inc., 4405 W. 259th Terrace, Louisburg, KS
Site Approval	Refer to Annex for FCC and Industry Canada Site Registration Letters
NVLAP	Lab code 200087-0

RF Output Power, Sub clause 4.3.1.1

Applicants declared operating frequency band: 2404 - 2470
Lowest frequency 2,404 MHz Highest frequency 2,470 MHz
Rated Output Power 8 dBm (±1dB)
Antenna assembly gain 2 dBi
Duty Cycle 76%

Test Condition		Transmitter Power (dBm)		
		Lowest Frequency	Middle Frequency	Highest Frequency
T_{nom} 21.1°C	V_{nom} 3.0 V_{dc}	8.98	9.00	8.97
T_{min} -30.0°C	V_{min} 2.3 V_{dc}	9.11	9.13	9.10
T_{min} -30.0°C	V_{max} 3.6 V_{dc}	9.11	9.13	9.10
T_{max} 80.0°C	V_{min} 2.3 V_{dc}	8.81	8.93	8.80
T_{max} 80.0°C	V_{max} 3.6 V_{dc}	8.81	8.93	8.80
Measurement Uncertainty		1.5 dB		

Limits

Under all test conditions	20 dBm (less than -10 dBW)

Maximum transmit power measurement was performed as defined in EN 300 328- 4.3.2

Reference Number(s) of Test Equipment Used (for references see test equipment listing)
7, 8, 9

Duty Cycle, Tx-sequence, Tx-gap, Sub clause 4.3.1.2

These requirements do not apply for equipment with a maximum declared RF Output power of less than 10 dBm e.i.r.p. or for equipment when operating in a mode where the RF Output power is less than 10 dBm e.i.r.p.

Accumulated Transmit Time, Frequency Occupation and Hopping Sequence, Sub clause 4.3.1.3

Applicants declared operating frequency band: 2404 - 2470
Lowest frequency 2,404 MHz Highest frequency 2,470 MHz
Rated Output Power 8 dBm (±1dB)
Antenna assembly gain 2 dBi
Duty Cycle 76%

The EUT utilizes 43 hopping channels and occupies each equally.
Dwell time of EUT was measured and plots produced demonstrating compliance.

Limits

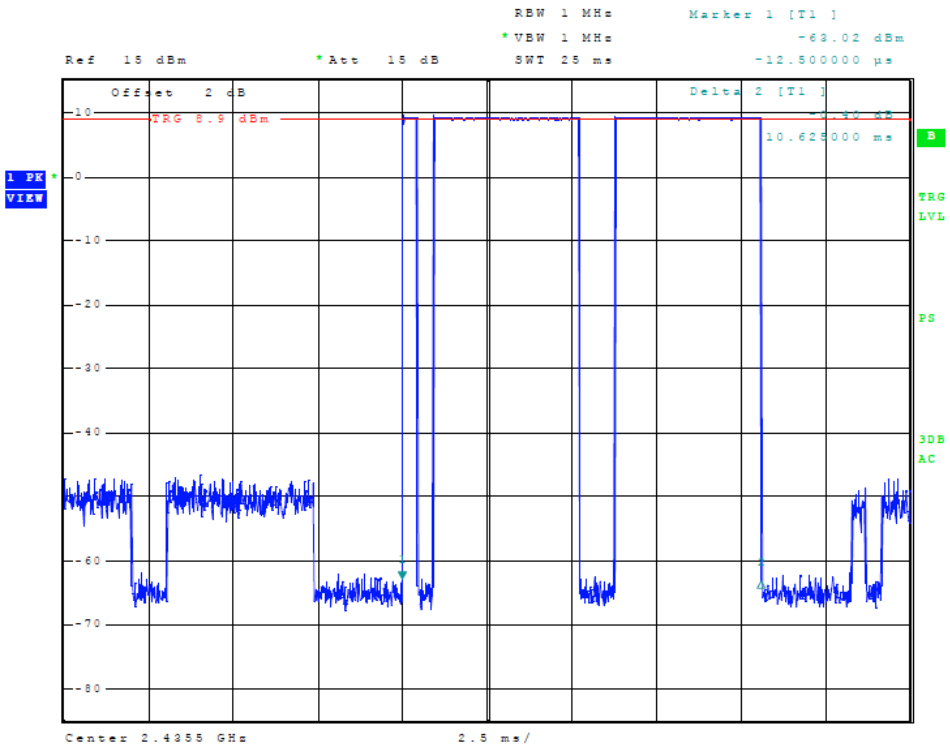
Under all test conditions Maximum Dwell time	0.4 seconds

Reference Number(S) of Test Equipment Used (for references see test equipment listing)
1, 7, 8, 9

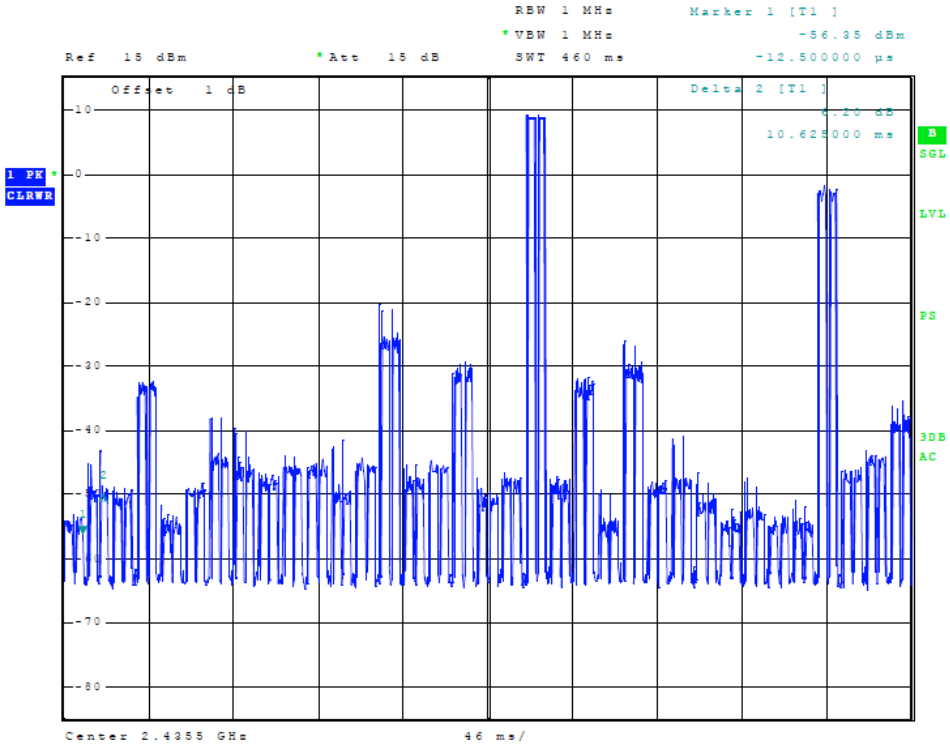
The device hops across 43 channels in the frequency band 2404 to 2466.9 MHz selecting channel frequency from a pseudo-random list of hopping frequencies at a rate of 0.013 seconds (13mS) hopping rate. The unit dwells on channel 10.625 mS, waits 2.375 mS every hop, and hops at a rate of 13 mS to the next channel in the hop sequence. The design hops on channel 1 times in a 0.43-second period (10.625 mS*43 channels = 0.43 seconds). The number of times on channel times the dwell time on channel predicts the accumulated transmit time is 10.625 mS.

The design uses each chop channel equally in the predefined hop list of 43 channels, which is greater than the required 2 channels.

The design occupies the hop channel for the duration of the typical dwell time.



Plot of Dwell time on channel

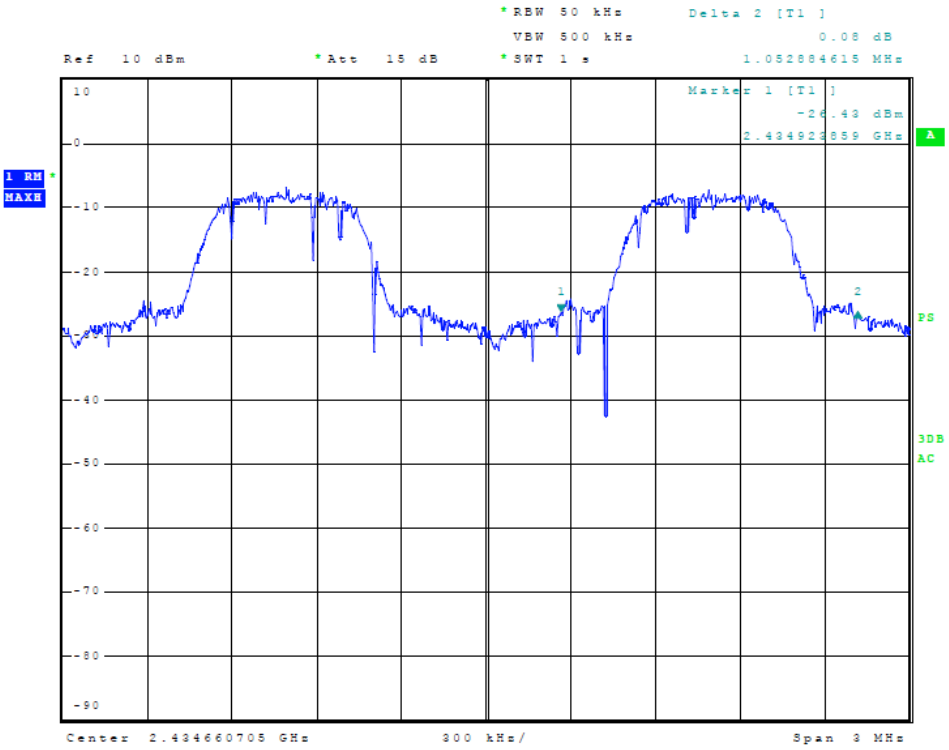


Plot of channel occupancy during 30-second period

Hopping Frequency Separation, Sub clause 4.3.1.4

Applicants declared operating frequency band: 2404 - 2470
Lowest frequency 2,404 MHz Highest frequency 2,470 MHz
Rated Output Power 8 dBm (±1dB)
Antenna assembly gain 2 dBi
Duty Cycle 76%

Limit
For equipment with a maximum declared RF Output power level of less than 10 dBm e.i.r.p. or for non-adaptive Frequency Hopping equipment operating in a mode where the RF Output power is less than 10 dBm e.i.r.p. only the minimum Hopping Frequency Separation of 100 kHz applies.



Plot of Frequency Serration

Medium Utilization (MU) Factor, Sub clause 4.3.1.5

This requirement does not apply for equipment with a maximum declared RF Output power level of less than 10 dBm e.i.r.p. or for equipment when operating in a mode where the RF Output power is less than 10 dBm e.i.r.p.

Adaptivity (Adaptive Frequency Hopping), Sub clause 4.3.1.6

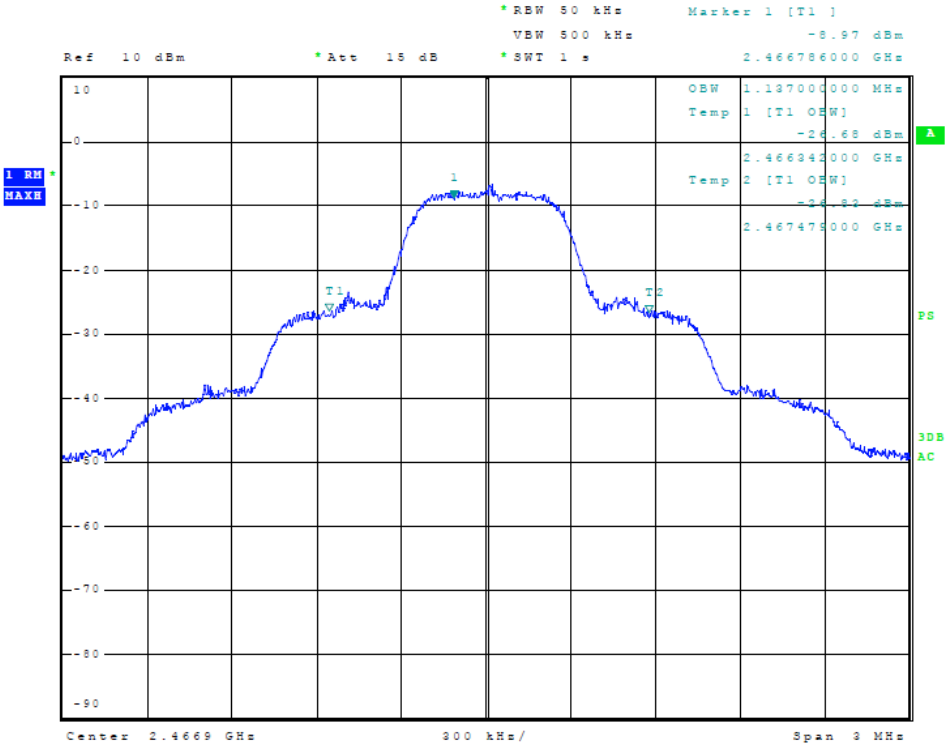
This requirement does not apply to non-adaptive equipment or adaptive equipment operating in a non-adaptive mode providing the equipment complies with the requirements and/or restrictions applicable to non-adaptive equipment.

In addition, this requirement does not apply for equipment with a maximum declared RF Output power level of less than 10 dBm e.i.r.p. or for equipment when operating in a mode where the RF Output power is less than 10 dBm e.i.r.p.

Occupied Channel Bandwidth, Sub clause 4.3.1.7

Applicants declared operating frequency band: 2404 - 2470
Lowest frequency 2,404 MHz Highest frequency 2,470 MHz
Rated Output Power 8 dBm (±1dB)
Antenna assembly gain 2 dBi
Duty Cycle 76%

Limit
The Occupied Channel Bandwidth for each hopping frequency shall fall completely within the band given in clause 1.
For non-adaptive Frequency Hopping equipment with e.i.r.p greater than 10 dBm, the Occupied Channel Bandwidth for every occupied hopping frequency shall be equal to or less than the Nominal Channel Bandwidth declared by the supplier. See clause 5.3.1 j). This declared value shall not be greater than 5 MH.



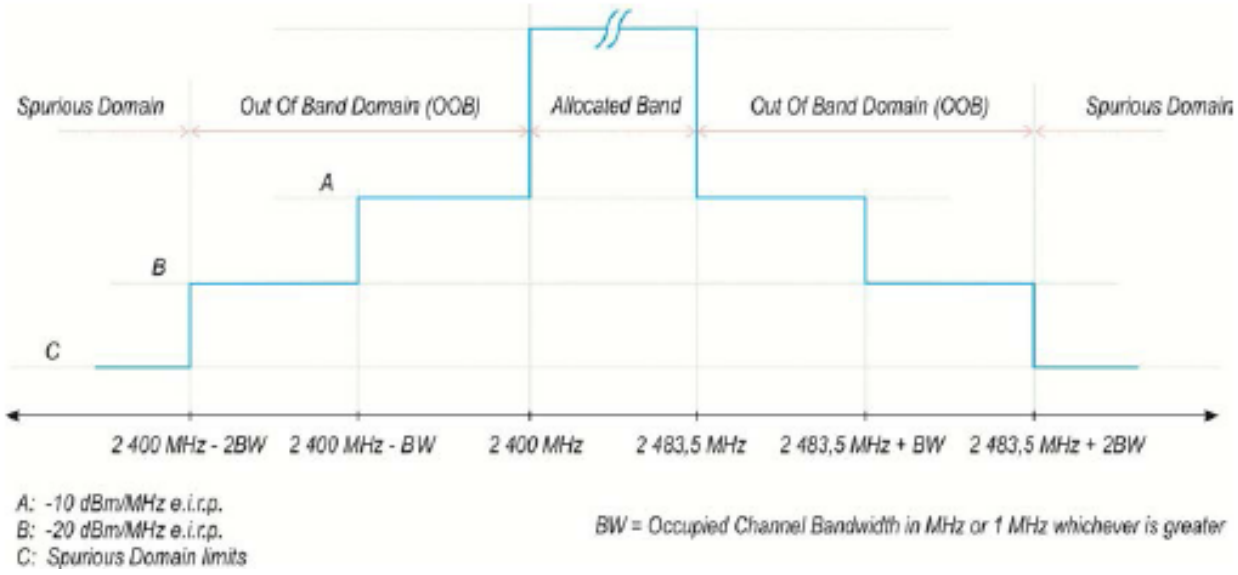
Plot of Occupied Bandwidth

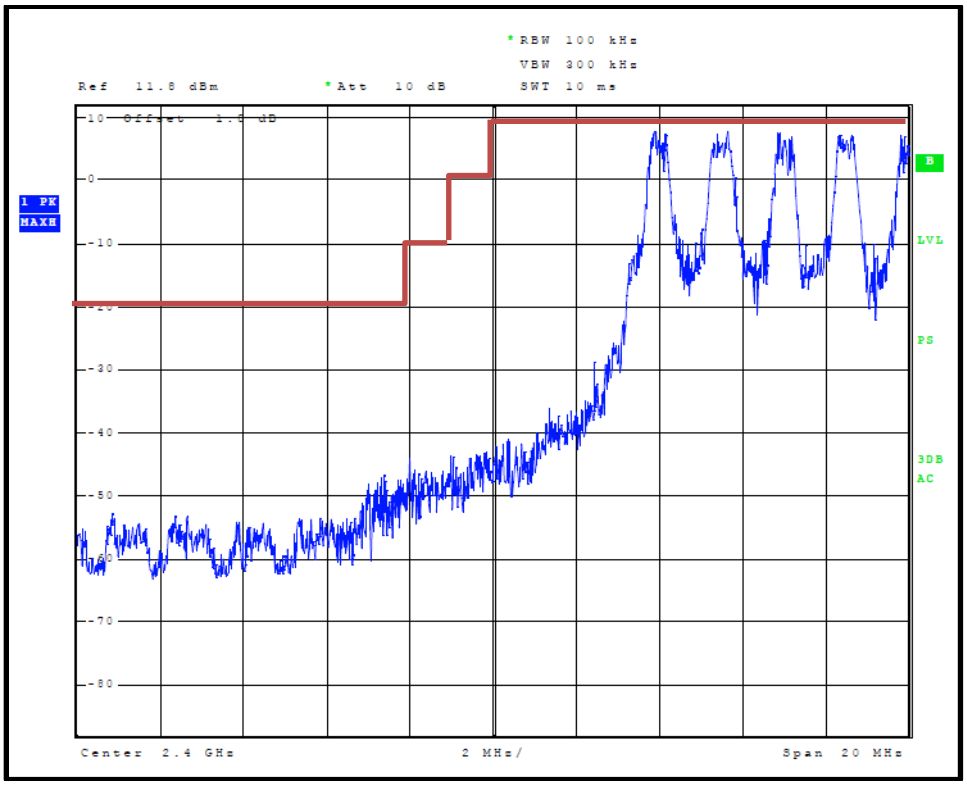
Transmitter unwanted emissions in the out-of-band domain, Sub clause 4.3.1.8

Applicants declared operating frequency band: 2404 - 2470
Lowest frequency 2,404 MHz Highest frequency 2,470 MHz
Rated Output Power 8 dBm (±1dB)
Antenna assembly gain 2 dBi
Duty Cycle 76%

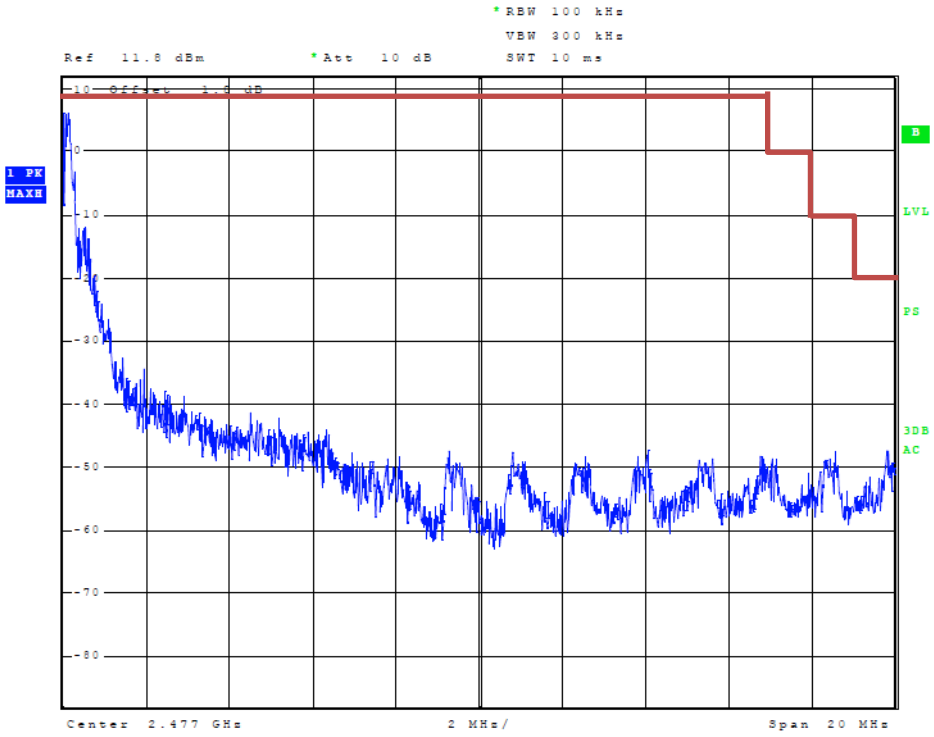
Limit
The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure 1.

NOTE: Within the 2 400 MHz to 2 483,5 MHz band, the Out-of-band emissions are fulfilled by compliance with the Occupied Channel Bandwidth requirement in clause 4.3.1.8.





Plot of Out-of-band emissions (low band edge)



Plot of Out-of-band emissions (high band edge)

Transmitter unwanted emissions in the spurious domain, Sub clause 4.3.1.9

Applicants declared operating frequency band: 2404 - 2470
Lowest frequency 2,404 MHz Highest frequency 2,470 MHz
Rated Output Power 8 dBm (±1dB)
Antenna assembly gain 2 dBi
Duty Cycle 76%

Limit
The transmitter unwanted emissions in the spurious domain shall not exceed the values given in table 1.

NOTE: In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted) and to the emissions radiated by the cabinet. In case of integral antenna equipment (without temporary antenna connectors), these limits apply to emissions radiated by the equipment.

Limit Table

Frequency range	Maximum power	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87.5 MHz	-36 dBm	100 kHz
87.5 MHz to 118 MHz	-546 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12.75 GHz	-30 dBm	1 MHz

Unwanted emissions (Antenna Port Conducted)

Frequency (MHz)	Spurious emissions level (dBm)	Measuring receiver bandwidth (MHz)
4808.0	-55.52	1.0
7212.0	-74.83	1.0
9616.0	-75.54	1.0
12020.0	-78.34	1.0
14424.0	-78.51	1.0
16828.0	-78.11	1.0
4870.9	-59.01	1.0
7306.4	-74.15	1.0
9741.9	-76.78	1.0
12177.3	-78.16	1.0
14612.8	-77.68	1.0
17048.3	-79.02	1.0
4933.9	-58.02	1.0
7400.8	-69.48	1.0
9867.7	-77.79	1.0
12334.6	-78.90	1.0
14801.6	-78.51	1.0
17268.5	-78.32	1.0
Measurement uncertainty (dB) 1.5 dB		

Unwanted emissions (Radiated Chip Antenna)

Frequency (MHz)	Spurious Emission Level (dBm) Horizontal	Spurious Emission Level (dBm) Vertical	Measurement Bandwidth (MHz)
4808.0	-83.63	-83.13	1.0
7212.0	-79.43	-78.93	1.0
9616.0	-75.83	-75.73	1.0
12020.0	-72.33	-72.33	1.0
14424.0	-66.33	-66.43	1.0
16828.0	-67.73	-67.73	1.0
4870.9	-82.43	-83.13	1.0
7306.4	-78.93	-79.33	1.0
9741.9	-75.93	-75.93	1.0
12177.3	-73.73	-73.63	1.0
14612.8	-68.13	-68.13	1.0
17048.3	-65.43	-65.43	1.0
4933.9	-83.73	-82.73	1.0
7400.8	-80.63	-80.53	1.0
9867.7	-76.33	-76.53	1.0
12334.6	-71.03	-71.73	1.0
14801.6	-68.03	-68.13	1.0
17268.5	-68.33	-68.33	1.0
Measurement uncertainty 6 dB			

Unwanted emissions (Radiated 2 dBi Dipole Antenna)

Frequency (MHz)	Spurious Emission Level (dBm) Horizontal	Spurious Emission Level (dBm) Vertical	Measurement Bandwidth (MHz)
4808.0	-64.13	-63.23	1.0
7212.0	-60.93	-60.43	1.0
9616.0	-59.33	-54.63	1.0
12020.0	-54.73	-54.83	1.0
14424.0	-48.63	-48.53	1.0
16828.0	-49.13	-49.13	1.0
4870.9	-63.73	6.07	1.0
7306.4	-63.23	-61.93	1.0
9741.9	-59.23	-55.13	1.0
12177.3	-53.33	-53.03	1.0
14612.8	-50.53	-50.43	1.0
17048.3	-48.73	-48.53	1.0
4933.9	-65.33	-59.93	1.0
7400.8	-62.13	-62.03	1.0
9867.7	-58.33	-58.03	1.0
12334.6	-52.93	-53.33	1.0
14801.6	-50.43	-50.43	1.0
17268.5	-51.43	-51.03	1.0
Measurement uncertainty 6 dB			

Receiver Spurious emissions, Sub clause 4.3.1.10

Applicants declared operating frequency band: 2404 - 2470
Lowest frequency 2,404 MHz Highest frequency 2,470 MHz
Rated Output Power 8 dBm (±1dB)
Antenna assembly gain 2 dBi
Duty Cycle 76%

Spurious emissions receiver operating – antenna port conducted

Channel Frequency (MHz)	Spurious Emission Frequency (MHz)	Spurious Emission Level (dBm)	Measurement Bandwidth (MHz)
2435.50	2435.5	< -77 dBm	1.0
			1.0
			1.0
			1.0
			1.0
			1.0
Measurement uncertainty 1.5 dB			

Note: No other emissions found having amplitudes greater than 20 dB below limit

Limits

Frequency Range	Limit	Measurement Bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12,75 GHz	-47 dBm	1 MHz

Receiver spurious emissions measurement was performed as defined in EN 300 328- 4.3.7

Reference Number(s) of Test Equipment Used (for references see test equipment listing)
5, 6, 7, 9, 10, 11, 12, 13

Receiver Blocking, Sub clause 4.3.1.11

This requirement does not apply to non-adaptive equipment or adaptive equipment operating in a non-adaptive mode.
In addition, this requirement does not apply for equipment with a maximum declared RF Output power level of less than 10 dBm e.i.r.p. or for equipment when operating in a mode where the RF Output power is less than 10 dBm e.i.r.p.

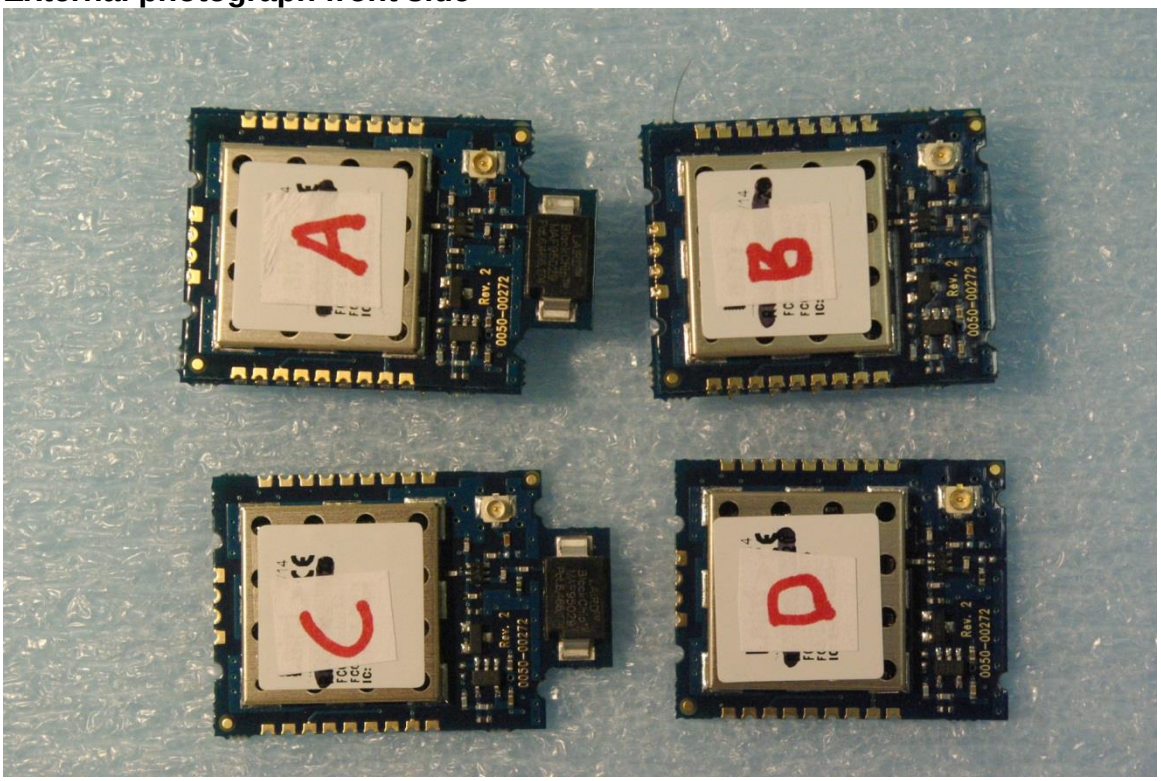
Test Equipment And Ancillaries Used For Tests

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

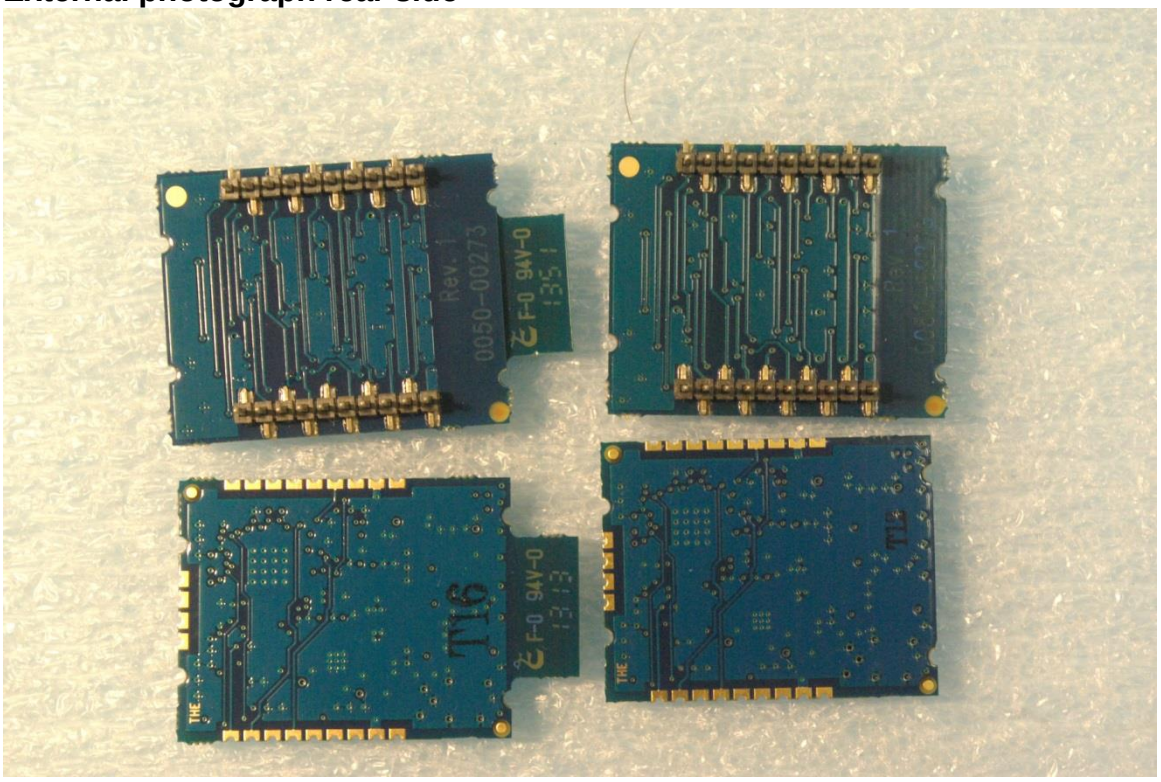
Reference	Instrument/Ancillary	Type	Manufacturer	Serial Number
1	Spectrum Analyzer	HP 8562A	Hewlett Packard	3051A05950
2	Spectrum Analyzer	HP8591EM	Hewlett Packard	3628A00871
3	Receive Antenna	Biconilog/3143	EMCO	9607-1277
4	Receive Antenna	Log Periodic /3147	EMCO	40582
5	Receive Antenna	Double Ridge Horn	Com-Power	10110
6	Receive Antenna	Loop	EMCO 6509	9502-1379
7	Power supply	DC Power supply	BK Precision	N961313540
8	Temperature Chamber	Tenney Jr	Tenney	11504-72
9	Spectrum Analyzer	Rohde & Schwarz	ESU40	100108
10	Pre-Amplifier	Com-Power	PA-010	171003
11	Pre-Amplifier	Com-Power	CPPA-102	01254
12	Pre-Amplifier	Com-Power	PA-22	711923
13				
14				

Photographs of the equipment

External photograph front side



External photograph rear side



Photograph Radiated Emissions Test Setup